



# An Ergonomics Guide to Pipette Selection & Use

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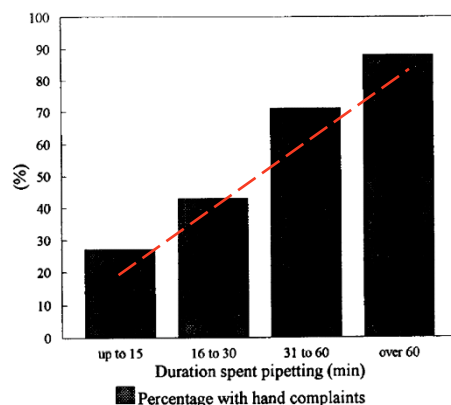


## Background:

Typical force and repetition rates in manual pipetting add up to 5,000-10,000 lbs/day, **enough to push over an elephant!**



Among pipette users<sup>1</sup>:  
44% reported hand or neck problems  
58% reported shoulder problems



Manual pipetting > 1.5 hours per day = 5x risk of hand problems vs. the risk for computer users.<sup>1,2</sup>

Risk factors associated with pipetting include *high repetition*, *high plunger forces*, and *static+awkward postures*

## References:

1. Bjorksten, 1994
2. David, 1996

For further information: Contact Ira Janowitz at [ILJanowitz@lbl.gov](mailto:ILJanowitz@lbl.gov) ; Tel: 510-486-6071

## Evaluation Criteria:

- Weight and Balance



BioHit Manual: Lightest manual pipette tested = 77 g



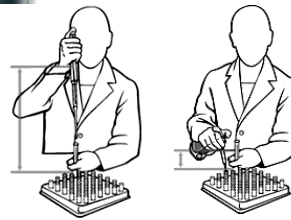
Ovation: Heaviest manual pipette tested (126g); but has good balance to counteract weight

- Grip comfort: hand & thumb position

- Plunger force & location



BioHit electronic tip ejection



Ovation shape reduces awkward hand/shoulder posture

- Hand & arm comfort
- Productivity
- Volume adjustment & display

Give your other hand a break  
Try a Microtube Opener !



## LBNL Survey – top 6 ratings

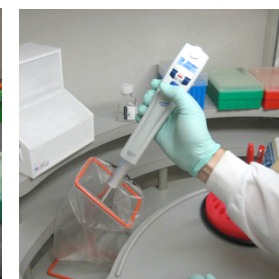
Ranking	Pipette	Total Score
1	Rainin Pipet-Lite w/ LTS	69.4
2	Thermo Finn timer Novus	68.2
3	Eppendorf Research	66.0
4	Biohit mLINE	61.4
5	Vistalab Ovation Electronic	60.0
6	Vistalab Ovation Manual	59.6

## Recommendations:

- Limit manual pipetting to four 20-min. periods, spread out over the course of the day
- Support arms when possible
- Select short tips & pipettors; short plungers
- Shorten reach distances (e.g., to tips & vials)
- Look for good fit: handle shape & diameter
- Low force, esp. for blow-out & tip ejection
- Clean and maintain pipettes
- Alternate hands during the course of the day
- Make sure you have adequate legroom
- Adjust chair to your most comfortable position



Padded elbow support  
Plate sloped upward



Good thumb position  
Tilted tip container